

REMARKS

Applicants respectfully request the Examiner to reconsider the present application in view of the foregoing amendments to the claims and the following remarks.

Status of the Claims

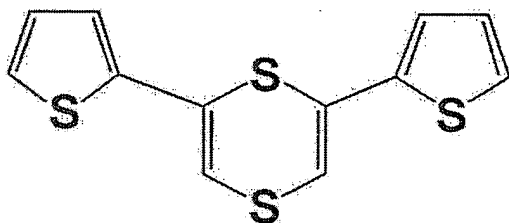
Claims 1, 3-6 and 12-15 are currently pending in the present application. Claims 7-11 are withdrawn from consideration as being directed to a non-elected invention. Claim 1 has been amended to recite the subject matter of canceled claim 2. No new matter has been added by way of the amendments.

In view of the fact that the Examiner has already considered claim 2, entry of the present Amendment would not be an undue burden on the Examiner. As such, entry of the present Amendment is respectfully requested.

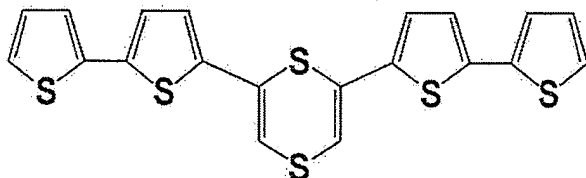
Issue Under 35 U.S.C. § 102(b), Anticipation

Claims 1-6, and 12-15 stand rejected under 35 U.S.C. § 102(b) as anticipated by Nakayama *et al.*, "Preparation of α -Quinque- and α -Septithiophenes and their Positional Isomers," *Heterocycles*, Vol. 26, No. 4, pp. 939-942 (1987) (hereinafter "Nakayama"). Applicants respectfully traverse the rejection.

As pointed out by the Examiner, Nakayama et al. disclose the following compounds 4, 8 and 12 having a 1,4-dithiin ring:



Compound 4



The chemical structure shows a central benzene ring with two sulfur atoms at the 1 and 4 positions. Each sulfur atom is connected to a phenyl ring. The phenyl rings are further connected to a chain of three more phenyl rings, with sulfur atoms at the connection points. The structure is symmetrical and represents a common motif in organic electronics.

The Examiner is aware that Nakayama teaches that these compounds are used as intermediates in the preparation of polythiophenes. The Examiner has not given weight to the fact that present claim 1 is drawn to a “charge transport organic material”, alleging that the charge transport property would be inherent in the compounds 4, 8 and 12.

Although Applicants do not agree with the Examiner's assertions, in order to advance prosecution, claim 1 has been amended to recite the subject of claim 2, i.e., that the charge transport organic material further comprises an electron accepting dopant substance or a hole accepting dopant substance.

Applicants have reviewed the Examiner's two recent Office Actions, and the Examiner has been silent as to why claim 2 has been included in the rejection. Accordingly, it is unclear to Applicants why the Examiner believes that Nakayama anticipates a charge transport organic material which further comprises an electron accepting dopant substance or a hole accepting dopant substance. In view of the fact that compounds 4, 8 and 12 are intermediates in the synthesis of polythiophenes, there is no teaching or suggestion by Nakayama to include an electron accepting dopant substance or a hole accepting dopant substance with compounds 4, 8 and 12.

Furthermore, Nakayama discloses that "Electrochemical polymerization of 1 affords electroconductive crystalline **doped polythiophene**." (Cf. line 3, p.939, emphasis added)

Therefore Nakayama fails to teach that a compound having a 1,4-dithiin ring serves as an electron conductor. Also Nakayama fails to teach that the above compounds having a 1,4-dithiin ring are used for a charge transport material with a dopant.

Accordingly, the amended claim 1 has novelty and is not anticipated by Nakayama.

Moreover, the inventive 1,4-dithiin compounds of the present invention have solubility characteristics making them more favorable to work with than the polythiophene final products of Nakayama. As described in the description [0004] of the present specification, in non-substituted thiophene oligomers, the molecules having more than four subunits are mostly insoluble in every solvent. In particular, as shown in Comparative Example 1, a thiophene pentamer was insoluble in DMAc. Furthermore, doped thiophene oligomers are generally more insoluble in organic solvents than non-doped thiophene oligomer.

On the other hand, as shown in Inventive Examples 1-5, the inventive compound having a 1,4-dithiin ring, even though it is doped with a dopant, is soluble in organic solvents.

In addition, as shown in Inventive Examples 6-9, the organic EL element having a thin film obtained from the varnish containing the inventive material emits light uniformly from an entire light-emitting face with no defects being observed. Those skilled in the art cannot foresee the solubility of the inventive material and the light-emitting characteristics of the inventive EL element from Nakayama who teaches that the compounds 4, 8 and 12 are used as intermediates in the preparation of polythiophenes.

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of anticipation. See MPEP §2131. In view of the fact that Nakayama fails to teach or suggest including an electron accepting dopant substance or a hole accepting dopant substance with compounds 4, 8 and 12, a *prima facie* case of anticipation cannot be said to exist. Reconsideration and withdrawal of the rejection are respectfully requested.

Inventive Claims 5, 6, 14 and 15

Inventive claims 5, 6, 14 and 15 are further patentable over Nakayama. Inventive claims 5 and 14 are drawn to a charge transport thin film and inventive claims 6 and 15 are drawn to an organic electroluminescent element comprising the charge transport thin film of claims 5 and 14, respectively. Applicants respectfully submit that there is absolutely no teaching or suggestion to use compounds 4, 8 and 12 (which are intermediates in the synthesis of polythiophenes) of Nakayama in a thin film or in an organic electroluminescent element. On this matter, the Examiner states that this is an *intended use*. This is confusing to Applicants because claims 5 and 14 are not drawn to the charge transport varnish for use as a thin film. Claims 5 and 14 are drawn to the thin film itself, which is prepared from the charge transport varnish. Also, inventive claims 6 and 15 are drawn to an organic electroluminescent element comprising the charge transport thin film of claims 5 and 14. In view of the foregoing, Claims 5, 6, 14 and 15 are further patentable over Nakayama.

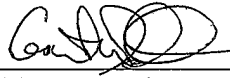
In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. Reg. No. 43,575 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Dated: August 20, 2009

Respectfully submitted,

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